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09/827,027	04/04/2001	Kanako Miyashita	NAK1-BO38	4851

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EXAMINER

LEON, EDWIN A

ART UNIT	PAPER NUMBER
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2833

DATE MAILED: 11/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

CA

# Office Action Summary

Application No.

09/827,027

Applicant(s)

MIYASHITA ET AL.

Examiner

Edwin A. León

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2003 and 25 September 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 and 27-37 is/are rejected.
- 7) ☒ Claim(s) 25 and 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Amendment*

1. Applicant's amendment and Request for Continued Examination filed August 21, 2003 and September 25, 2003 in which Claims 1, and 16 have been amended, have been place of record in the file as Papers No. 14 and 16, respectively.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-24, 27-32, 34-35 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura (Japanese Publication No. 11-250804). Reference numbers, columns and lines taken from patent counterpart Nishimura (U.S. Patent No. 6,309,272). With regard to Claims 1 and 34, Nishimura discloses a method for producing a display panel that has a front (86) substrate and a back (81) substrate disposed to face each other, the method comprising: a pre-baking phosphor (Column 11, Lines 32-67, Column 12, Lines 1-26) layer (Column 19, Lines 29-63) forming step for forming a pre-baking phosphor (Column 11, Lines 32-67, Column 12, Lines 1-26)

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layer (Column 19, Lines 29-63) containing a phosphor (Column 11, Lines 32-67, Column 12, Lines 1-26) and an organic binder (Column 11, Lines 32-67, Column 12, Lines 1-26), on at least one of the surfaces of the front (86) substrate and the back (81) substrate that are to face each other; a sealing material (Column 11, Lines 32-67, Column 12, Lines 1-26) applying step for applying a sealing material (Column 11, Lines 32-67, Column 12, Lines 1-26) that softens with heat, to the peripheral region of at least one of the surfaces of the front (86) and back (81) substrates that are to face each other; a stacking step (Column 19, Lines 29-67 and Column 20, Lines 1-55) for, after the pre-baking phosphor (Column 11, Lines 32-67, Column 12, Lines 1-26) layer (Column 19, Lines 29-63) forming step and the sealing material (Column 11, Lines 32-67, Column 12, Lines 1-26) applying step, disposing the front (86) and back (81) substrates to face each other in a stack; and a baking step (Column 19, Lines 29-67 and Column 20, Lines 1-55) for heating the front (86) and back (81) substrates to burn out the organic binder (Column 11, Lines 32-67, Column 12, Lines 1-26) while supplying a dry gas containing oxygen to an internal space that is formed between the front (86) and back (81) substrates. See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

However, Nishimura doesn't show the display panel being a plasma display panel.

Still, it would have been obvious to one with ordinary skill in the art at the time the invention was made to use the method of Nishimura to make a plasma display panel in order to provide the plasma display panel with sufficient high luminance.

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With regard to Claim 2, Nishimura discloses the sealing material (Column 11, Lines 32-67, Column 12, Lines 1-26) being a glass frit that softens at a temperature lower than the highest temperature achieved in the baking step (Column 19, Lines 29-67 and Column 20, Lines 1-55). See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claims 3, 7-9, and 19-20, Nishimura discloses the claimed invention except for the glass frit having a softening point of 400 IC or 3 higher, at least one of the front and back substrates having thickness of 2 mm or less, a flow rate of the dry gas supplied to the internal space being 1 CCM per 1 cm<sup>3</sup> of the internal space, a flow rate of oxygen contained in the dry gas supplied to the internal space being 0.5 CCM per 1 cm<sup>3</sup> of the internal space, the glass frit has a softening point of 400 C or higher, or in the bonding step, the front and back substrates being heated to a temperature in a range of 400 C to 520 C.

However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the glass frit having a softening point of 400 IC or higher, at least one of the front and back substrates having thickness of 2 mm or less, a flow rate of the dry gas supplied to the internal space being 1 CCM per 1 cm<sup>3</sup> of the internal space, a flow rate of oxygen contained in the dry gas supplied to the internal space being 0.5 CCM per 1 cm<sup>3</sup> of the internal space, the glass frit has a softening point of 400 C or higher, or in the bonding step, the front and back substrates being heated to a temperature in a range of 400 C to 520 C, since it has been held that where

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the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

With regard to Claim 4, Nishimura discloses a preliminary baking step (Column 19, Lines 29-67 and Column 20, Lines 1-55) between the sealing material (Column 11, Lines 32-67, Column 12, Lines 1-26) applying step and the stacking step (Column 19, Lines 29-67 and Column 20, Lines 1-55), wherein in the preliminary baking step (Column 19, Lines 29-67 and Column 20, Lines 1-55), the glass frit is heated to a predetermined temperature to be preliminarily baked. See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claim 5, Nishimura discloses the sealing material (Column 11, Lines 32-67, Column 12, Lines 1-26) being a glass frit that being substantially composed of a crystalline glass. See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claim 6, Nishimura discloses the baking step (Column 19, Lines 29-67 and Column 20, Lines 1-55), the heating is suspended for a predetermined time period after a temperature of the front (86) and back (81) substrates reaches to a predetermined temperature, then the heating is resumed to burn out the organic binder (Column 11, Lines 32-67, Column 12, Lines 1-26). See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

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With regard to Claim 10, Nishimura discloses in the baking step (Column 19, Lines 29-67 and Column 20, Lines 1-55), the front (86) and back (81) substrates being heated while being secured by pressure applied by a plurality of pressing units (Column 19, Lines 29-67 and Column 20, Lines 1-55) attached to the front (86) and back (81) substrates. See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claim 11, Nishimura discloses the plurality of pressing units (Column 19, Lines 29-67 and Column 20, Lines 1-55) applying pressure to the peripheral region of the front (86) and back (81) substrates. See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claim 12, Nishimura discloses the plurality of pressing units (Column 19, Lines 29-67 and Column 20, Lines 1-55) applying pressure to the front (86) and back (81) substrates inward of the sealing material (Column 11, Lines 32-67, Column 12, Lines 1-26), excluding the central region of the front (86) and back (81) substrates. See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claim 13, Nishimura discloses an exhausting step (Column 11, Lines 32-67, Column 12, Lines 1-26) for exhausting gases from the internal space, wherein the exhausting step (Column 11, Lines 32-67, Column 12, Lines 1-26) is started before the front (86) and back (81) substrates cool off to ambient temperature after the baking step (Column 19, Lines 29-67 and Column 20, Lines 1-55). See Figs. 8A-8B and

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15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claim 14, Nishimura discloses the exhausting step (Column 11, Lines 32-67, Column 12, Lines 1-26) being completed before the front (86) and back (81) substrates cool off to ambient temperature after the baking step (Column 19, Lines 29-67 and Column 20, Lines 1-55). See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claim 15, Nishimura discloses in the exhausting step (Column 11, Lines 32-67, Column 12, Lines 1-26), gases being exhausted while the internal space is maintained at a constant temperature. See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claims 16 and 37, Nishimura discloses a method for producing a display panel that has a front (86) substrate and a back (81) substrate disposed to face each other, the method comprising: a pre-baking phosphor (Column 11, Lines 32-67, Column 12, Lines 1-26) layer (Column 19, Lines 29-63) forming step for forming a pre-baking phosphor (Column 11, Lines 32-67, Column 12, Lines 1-26) layer (Column 19, Lines 29-63) containing a phosphor (Column 11, Lines 32-67, Column 12, Lines 1-26) and an organic binder (Column 11, Lines 32-67, Column 12, Lines 1-26), on at least one of surfaces of the front (86) substrate and the back (81) substrate that are to face each other; a sealing material (Column 11, Lines 32-67, Column 12, Lines 1-26) applying step for applying a sealing material (Column 11, Lines 32-67, Column 12, Lines 1-26) that softens with heat, to the peripheral region of one of the surfaces of the front (86)



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and back (81) substrates that are to face each other; a baking step (Column 19, Lines 29-67 and Column 20, Lines 1-55) for, after the pre-baking phosphor (Column 11, Lines 32-67, Column 12, Lines 1-26) layer (Column 19, Lines 29-63) forming step and the sealing material (Column 11, Lines 32-67, Column 12, Lines 1-26) applying step, burning out the organic binder (Column 11, Lines 32-67, Column 12, Lines 1-26) by heating the front (86) and back (81) substrates in a furnace; while the surfaces of the front (86) and back (81) substrates are positioned to face each other and are separated from each other to provide enough space to allow gases to escape, from an internal space between the faces of the substrate, to outside of the substrates; and a bonding step (Column 19, Lines 29-67 and Column 20, Lines 1-55) for disposing the front (86) and back (81) substrates to contact the sealing material for bonding the front (86) and back (81) substrates by keeping the front (86) and back (81) substrates at a temperature higher than the softening point of the sealing material (Column 11, Lines 32-67, Column 12, Lines 1-26). See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

However, Nishimura doesn't show the display panel being a plasma display panel.

Still, it would have been obvious to one with ordinary skill in the art at the time the invention was made to use the method of Nishimura to make a plasma display panel in order to provide the plasma display panel with sufficient high luminance.

With regard to Claim 17, Nishimura discloses in the bonding step (Column 19, Lines 29-67 and Column 20, Lines 1-55), after the front (86) and back (81) substrates

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are disposed to face each other, a dry gas containing oxygen is supplied to an internal space formed between the front (86) and back (81) substrates. See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claim 18, Nishimura discloses the sealing material (Column 11, Lines 32-67, Column 12, Lines 1-26) being a glass frit. See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claim 21, Nishimura discloses in the baking step (Column 19, Lines 29-67 and Column 20, Lines 1-55), the front (86) and back (81) substrates are heated in an atmosphere of a dry gas. See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claim 22, Nishimura discloses in the baking step (Column 19, Lines 29-67 and Column 20, Lines 1-55), the front (86) and back (81) substrates being heated in an atmosphere of a circulated dry gas. See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claim 23, Nishimura discloses the dry gas used in the baking step (Column 19, Lines 29-67 and Column 20, Lines 1-55) contains oxygen. See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

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With regard to Claim 24, Nishimura discloses in the baking step (Column 19, Lines 29-67 and Column 20, Lines 1-55), gases released from the front (86) and back (81) substrates as the substrates are heated are removed forcibly. See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claim 27, Nishimura discloses positioning markers are formed on surfaces of the front (86) and back (81) substrates before the baking step (Column 19, Lines 29-67 and Column 20, Lines 1-55), and in the bonding step (Column 19, Lines 29-67 and Column 20, Lines 1-55), the front (86) and back (81) substrates are positioned using the positioning markers so as to face each other. See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claim 28, Nishimura discloses an exhausting step (Column 11, Lines 32-67, Column 12, Lines 1-26) for exhausting gases from the internal space, wherein the exhausting step (Column 11, Lines 32-67, Column 12, Lines 1-26) is started before the front (86) and back (81) substrates cool off to ambient temperature after the bonding step (Column 19, Lines 29-67 and Column 20, Lines 1-55). See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claim 29, Nishimura discloses the exhausting step (Column 11, Lines 32-67, Column 12, Lines 1-26) being completed before the front (86) and back (81) substrates cool off to ambient temperature after the baking step (Column 19, Lines

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29-67 and Column 20, Lines 1-55). See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claim 30, Nishimura discloses in the exhausting step (Column 11, Lines 32-67, Column 12, Lines 1-26), gases are exhausted while the internal space is maintained at a constant temperature. See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claim 31, Nishimura discloses a display panel production apparatus for use in the baking step (Column 19, Lines 29-67 and Column 20, Lines 1-55) and the bonding step (Column 19, Lines 29-67 and Column 20, Lines 1-55) comprising: a heating furnace (Column 11, Lines 32-67, Column 12, Lines 1-26) for housing and heating the front (86) and back (81) substrates disposed to face each other; and a dry gas supplying mechanism (Column 11, Lines 32-67, Column 12, Lines 1-26) for supplying a dry gas to an internal space formed between the front (86) and back (81) substrates. See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claim 32, Nishimura discloses an exhausting mechanism (208) for exhausting gases from the internal space. See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

With regard to Claims 34 and 37, Nishimura discloses a display panel (Column 19, Lines 29-67 and Column 20, Lines 1-55) produced by the method mentioned above. See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

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With regard to Claim 35, Nishimura discloses an image display apparatus (Column 19, Lines 29-67 and Column 20, Lines 1-55) comprising: the display panel (Column 19, Lines 29-67 and Column 20, Lines 1-55) and a driving circuit (Column 19, Lines 29-67 and Column 20, Lines 1-55) for driving the display panel (Column 19, Lines 29-67 and Column 20, Lines 1-55). See Figs. 8A-8B and 15; Column 11, Lines 32-67, Column 12, Lines 1-26, Column 19, Lines 29-67 and Column 20, Lines 1-55.

4. Claims 33 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura (Japanese Publication No. 11-250804) in view of Aoki et al. (U.S. Patent No. 6,369,501). Nishimura discloses the claimed invention except for  $\text{BaMgAl}_{10}\text{O}_{17}:\text{Eu}$  being used as a phosphor constituting a blue phosphor layer.

Aoki et al. discloses  $\text{BaMgAl}_{10}\text{O}_{17}:\text{Eu}$  being used as a phosphor constituting a blue phosphor layer. See Column 10, Lines 26-29.

Thus, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify the display of Nishimura by including  $\text{BaMgAl}_{10}\text{O}_{17}:\text{Eu}$  being used as a phosphor constituting a blue phosphor layer as taught in Aoki et al. to improve the adsorption capabilities of the display.

#### ***Allowable Subject Matter***

5. Claims 25-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of

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the base claim and any intervening claims for the reasons given in the Office Action of September 12, 2002.

***Response to Arguments***

6. Applicant's arguments with respect to claims 1-24 and 27-37 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edwin A. León whose telephone number is (703) 308-6253. The examiner can normally be reached on Monday - Friday 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula A. Bradley can be reached on (703) 308-2319. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Edwin A. León  
AU 2833  
EAL  
November 14, 2003

